TRANSFORMING CONSTRUCTION NETWORK PLUS

CALL OUTLINE
ROUND 2: SMALL RESEARCH PROJECTS FUNDING
TRANSFORMING CONSTRUCTION NETWORK PLUS

ABOUT THE TRANSFORMING CONSTRUCTION NETWORK PLUS

The Transforming Construction Network Plus (N+) unites construction’s academic and industrial communities to create a new research and knowledge base, dedicated to addressing the systemic problems holding back the sector.¹

The N+ is led by the UCL Bartlett School of Construction and Project Management, in partnership with Imperial College London and WMG, University of Warwick. It is funded by UKRI, as an investment under the Industrial Strategy Challenge Fund (ISCF). The aim of the N+ is to provoke, enable and amplify innovation, through four main objectives:

- **Knowledge**: to inform new research and development (R&D) models and government policy that link digital, construction, manufacturing and energy to improve productivity
- **Community building**: to advance collaborations through knowledge exchange and debate, beyond what is currently possible
- **Business models**: to produce user-informed, practical resources that accelerate pathways to manufacture and delivery
- **Investment and legacy**: to de-risk and increase construction sector business R&D spend and enable new R&D collaborations that outline the N+ two-year grant.

The N+ focuses on supporting research that takes a holistic approach, which means thinking of construction as a production 'system' for built assets that adds value to cities and their infrastructures. Transforming design, construction and operation of buildings is a problem that demands input from a wide range of backgrounds and disciplines, which is why major, coordinated investments are being made through the Transforming Construction Challenge.

FUNDING CALL – SMALL RESEARCH PROJECT FUNDING

This is an open call for proposals, of up to 6 months’ duration, to be funded through the N+. Projects should address the biggest problems facing the construction industry, by focussing on the gaps, inter-relationships and under-explored regions of this domain, spanning digital, energy, construction and manufacturing expertise, in line with the expectations of the Industrial Strategy Construction Sector Deal. There is no minimum value for a request, but the maximum that shall be awarded to any single project is £75,000 (at 80% FEC).

This Call document contains all the key information pertaining to Round 2 of the Small Projects Funding available from the N+, describing in detail the types of projects, scope, ambition and impact that applicants are expected to address in their proposals.

In this Round, we identify some guiding research questions to help applicants align their proposals more closely with the needs of the Transforming Construction Challenge. A few specific exclusions are also noted.

A separate document is available for the discipline-hopping scheme for Early Career Researchers.

Projects funded in the first round of the N+ can be found here.

Timetable:

<table>
<thead>
<tr>
<th>Event</th>
<th>Date/Time</th>
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<tbody>
<tr>
<td>Call opens – launch date</td>
<td>Thursday 19 September 2019</td>
</tr>
<tr>
<td>Briefing Workshop, Online webinar</td>
<td>09.00 – 10.00, Wednesday 25 September 2019</td>
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<tr>
<td>Closing time and date for applications</td>
<td>16.00, Thursday 14 November 2019</td>
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<tr>
<td>Funding decision</td>
<td>Monday 16 December 2019</td>
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<tr>
<td>Projects may start from</td>
<td>Monday 3 February 2020</td>
</tr>
<tr>
<td>Expected end date for Round 2 projects</td>
<td>Friday 31 July 2020</td>
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Successful teams will be required to attend and make presentations at the following events:

N+ Strategy Board meeting                         | Wednesday 11 March 2020
N+ Annual Conference, London                      | September 2020 – date to be confirmed

<table>
<thead>
<tr>
<th>Grant Name</th>
<th>Value</th>
<th>Amount Available</th>
<th>Duration</th>
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<tbody>
<tr>
<td>Small Research Project Funding</td>
<td>£ 75,000 (at 80% FEC) – applicants may request less than this</td>
<td>£ 500,000</td>
<td>6 months – applicants may request shorter durations than this</td>
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Scope:
Funding is available for Small Projects – which could address research questions derived from prior academic study or respond to industry need in the Transforming Construction Challenge’s core themes of:

- designing and managing buildings through digitally-enabled performance and management
- constructing quality buildings through an offsite manufacturing approach
- reducing energy demand by improving quality of build and powering buildings through embedded active technologies².

All research supported through the N+ should focus on the gaps, inter-relationships and under-explored regions of this domain, spanning digital, energy, construction and manufacturing expertise. There are clearly implications for all aspects of the built environment, so projects can address any or several stages in the life of a construction project, from inception through to operation and end of life. The N+ will support research that takes a holistic approach, in which construction is viewed as a means of producing built assets to benefit their societies – buildings are framed within a broader ‘infrastructure’. Novelty in approach is very much recommended.

Transforming design, construction and operation of buildings is a problem that demands input from a wide range of backgrounds and disciplines, so new, interdisciplinary collaborations are strongly encouraged. Drawing ideas, methods or theories from other disciplines could hold great potential. Taking a novel or different (e.g. interdisciplinary) perspective on cross-cutting sectoral challenges, such as procurement, productivity and performance is welcomed.

Projects that involve industry partners are particularly welcomed, although it is not necessary to have industry partners to apply to this Call.

Projects are expected to focus on research and development that lies within Technology Readiness Levels (TRL) 3-8, or that draws on existing insights to test and validate solutions. They could involve desk research, applied study, action research, secondment and other novel methods of research that are appropriate to the project aims. Projects should have outcomes that deliver impact, but they should also lay the foundations for further work, e.g. by supporting the development of proposals for more substantive future research.

A strong vision of anticipated impact and clear and viable steps towards a sustained programme of research is expected. Outputs are most likely to be in the form of a report, but other outputs such as tools, proof of concept, multi-media demonstrations and other innovations, are encouraged. Data is likely to be an important feature of most projects; a data management plan is required to ensure that data is appropriately curated, stored and made available for future research, where feasible.

Importantly, applicants must focus on how their research will contribute to the Transforming Construction Challenge, as an industry movement, idea, and change programme. Some applicants may frame this as an ‘engaged scholarship’ approach, in which education contributes to the development of a stakeholder or user community.

² Please note that projects that focus centrally on retrofit are outside of the scope of this programme.
Links with other investments in the TCC portfolio

It is suggested that projects consider carefully how their work might connect with, and enhance, work in centres funded by the Transforming Construction Challenge. If you think your idea could make a useful link or contribution to the following, please contact the N+ team straight away for advice:

- **Active Building Centre** (ABC) delivered by a consortium led by Swansea University with a £36M budget, ABC seeks to remove barriers and accelerate market adoption of solar-powered building design;
- **Construction Innovation Hub** (CIH) delivered by a partnership between the Manufacturing Technology Centre, the University of Cambridge Centre for Digital Built Britain and the Building Research Establishment with a £72M budget, CIH is supporting the development and use of technologies such as digital design, advanced manufacturing, robotics, drones and augmented and virtual reality.

Further advice around the Scope of the Call

To help align proposals more closely with the needs of the Transforming Construction Challenge, applicants are advised to consider the following guiding research questions – presented here as pointers for academic discussion, not a tick-list to be answered.

- Thinking about value - where is value created and captured now and by whom, and where is it lost? Will this change as the industry transforms? What theories can we draw on to help understand this transition? In what ways do other sectors create and capture value? What can the construction industry and firms learn from them? How do we move away from a cyclical model?
- How might the industry better engage with and manage disruptive innovation? In what ways can change be encouraged or inspired, such that firms or projects are able to innovate? Can we learn from social or political movements in other contexts and settings, for example? What are the blockers that industry needs to overcome to make innovation work in practice?
- How can construction firms and projects respond to key policy developments and their recommendations, such as Dame Judith Hackitt’s report and the ‘golden thread’?
- As the industry becomes less fragmented (i.e. more integrated), what are the implications for the management and organisation of firms and projects?
- With 10% of industry personnel based in large firms, are there distinct or novel mechanisms that could help the 90% of people based in SMEs? How have SMEs evolved in other sectors to deal with change, say, at the firm or sector level? What can we learn from them? What will the construction SME of the future look like?
- As more projects are procured based on outcomes, for example guarantees of operational energy performance, what are the implications? Does it necessitate new business models at the level of the firm? If so, which types of firms might be most affected? Who is at risk and who might prosper? Do project delivery models need to change? If so, which actors might be most influential? How do ways of working need to be adapted – which technical, managerial or operational issues would be affected?
- What can construction learn from leading practice in supply chain management and process innovation in other sectors – for example, in the high volume, relatively low variety context of
fast moving consumer goods and retail? What is the role for firms like builders’ merchants and logistics providers? How can construction use digital technologies to improve integration across end-to-end construction supply chains?

**Briefing webinar**

Applicants are strongly encouraged to register for the webinar scheduled on Wednesday 25 September, between 9.00 and 10.00am. This will form an important opportunity to understand more about the Call and what is expected.

**Specific exclusions**

In this round, we do NOT expect to support proposals that:

- do not respond to the aims and objectives of the Transforming Construction ISCF Programme and are unable to tangibly demonstrate improvements to the current state-of-the-art in construction
- are focussed on skills (although reference to skills as a by-product of proving new techniques is permitted)
- duplicate innovation in: traditional construction methods, BIM Level 2 tools, Project 13 methodologies and/or Gemini Principles, DFTG, CDBB or CLC work, MMC categories 3, 6 and 7a + 7b, or retrofit
- target refurbishment and retrofit of built assets
- duplicate the work undertaken by the Small Projects funded in the N+ Round 1. Further information on the projects is available on the N+ website.

**Eligibility:**

- Any organisation that is eligible to receive **UKRI funding**, typically academic institutions.
- Every Small Project shall have a named **Lead University**. This organisation may apply independently, or may include other Project Partners in its application.
- **Funding shall be awarded only to the Lead University.** UCL will contract with the Lead University only. Any subsequent distribution of funding to Project Partners shall be the responsibility of the Lead University.
- The award holder may include other stakeholders (Project Partners) in their project team but should not exceed more than **three Co-Investigators**. The inclusion of Co-Investigators should be clearly justified in respect of their added value (e.g. bringing expertise from a different discipline, or a different methodology) and the duties/responsibilities they will commit to undertake as part of the project. Applicants are strongly advised not to submit proposals with multiple Co-Investigators from the same academic department, as this is unlikely to fulfil the Quality and Management Criteria.
- **Industrial participation and ‘match funding’** is strongly encouraged and desirable. Estimates of contributions (whether cash or in-kind) would be a useful addition to the application; industry participation shall be considered in the review process, but only in respect of the additionality it brings, under two specific criteria: ‘Management’ and ‘Impact’ (see Assessment
Criteria section). In other words, simply having industry participation does not mean a proposal will attract a higher score – the choice needs to be shown as appropriate and adding value to the proposal, i.e. ‘is it necessary?’ and ‘what does it add?’.

- Each project shall have a named **Principal Investigator** (PI). The PI shall be employed continuously by the Lead University (i.e. their post will outlast the project). The PI shall be considered the key contact for the award, taking responsibility for delivery, budget and reporting. The PI must be from the organisation that will administer the grant. The PI will take intellectual leadership of the project and manage the research. All named investigators are responsible for ensuring that successful proposals are undertaken and completed in the manner specified.

- Any funding requested for staff shall only be awarded for **named individuals**, who are already in post in the organisation. The short duration of the Small Projects precludes the option of making new appointments in the funding period.

- **Early career researchers** (ECR), (including post-doctoral researchers and new/probationary lecturers) are eligible to participate and are encouraged to do so, but shall **not** act in the role of PI. Where an ECR is the primary actor in a Small Project, a PI shall be named and shall be considered as the key contact for the award, taking responsibility for delivery, budget and reporting. In this case, a request for a modest percentage of the PI’s time may be included in the request (expected to be at least 2%). Please note that a dedicated ‘discipline-hopping’ scheme is available exclusively for ECR in Round 2, which has a separate briefing document and requirements.

- **Impact**: in line with UKRI expectations, it is recommended that applicants should allocate approximately 10% of the requested costs for impact activities.

### Eligible costs:

If successful, applicants will receive 80% of the full economic costs on proposals submitted up to a maximum award of £75,000 and the host institution shall support the remaining 20%. Applicants are advised that value for money is a criterion in the assessment, so should ensure that their request is appropriate for the scope, ambition and expected impact, and can viably be spent within the maximum six months permitted.

- **Directly Allocated staff**: Investigators
- **Directly Incurred staff**: Researchers and Technicians
- **Travel and Subsistence**
- **Other Directly Incurred costs**: project specific consumables, consultancy fees, and equipment costing less than £10,000. Costs associated with UK co-investigators in business, civil society or government bodies may be requested, however these would not be expected to exceed £10,000.

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3 Early Career Researchers shall typically be no more than four years post award of PhD/EngD. They may be within a researcher role or an academic role at the point of application.

4 The PI allocation can be as low as 2% (e.g. if this is a senior member of staff guiding an early career researcher). Otherwise, a PI is expected to be allocated at around 20%. Co-Investigators may be allocated at around 10%. If an early career researcher is taking a lead role, then their allocation should be at least 30%.
10% of the value of the total amount requested. Applications that exceed this will require additional justification about why this amount is appropriate and represents value for money.

- **Other Directly Allocated costs**: e.g. support staff salaries, a share of the costs of departmental support staff and/or the costs of access to major research facilities.
- **Estate and Indirect costs**.

**Ineligible costs**

The following may not be requested under this Call:

- Associated studentships
- Any equipment costing £10,000 or more (including VAT)
- Costs associated with International Co-Investigators
- Costs associated with UK co-investigators in business, civil society or government bodies (where this exceeds 10% of the total amount requested)
- Sub-contracted social surveys, or costs for surveys, that exceed £10,000.

**Expectations**

To align with the expectations of the TCC programme and the N+, successful applicants shall:

- **Provide updates on progress (if requested) and comply with mid and end project requests for reporting** (both during the project and post-completion). Reporting requirements will be provided to successful teams. These shall align with UKRI templates and ResearchFish (see ResearchFish website) and include commentary on whether aims have been achieved, methods used, data produced, publications or other outputs, other outcomes, impact achieved and planned, problems encountered, and forward plans.
- **Attend N+ events, as required**. This shall include presentations to the N+ Strategy Board and Annual Conference in September 2020 (see Key Dates).
- **Promote and amplify the N+ through their own networks**. The N+ Communications Officer will maintain contact with successful teams and those subscribed to receive updates to ensure that important information and announcements are disseminated widely.

**Selection Process**:

**Stage 1**: All applications shall be scored by a minimum of two reviewers

**Stage 2**: All reviews shall be considered in a ‘panel’ style evaluation meeting

**Stage 3**: Final list of projects shall be ratified by the N+ Strategy Board

Important note: The N+ reserves the right to reject proposals that are incomplete and that do not meet the requirements highlighted on the checklist before sending them to reviewers. The checklist can be found in the Application Form.
Scoring:

There are five Primary Criteria against which all proposals shall be assessed. Each contains three key points, as shown below. All applications shall be assessed against the same criteria, regardless of the size of request. Reviewers shall assess the size of the request solely in the *Value for Money* criterion. Proposals shall be scored against each of the five criteria on a scale of 0-3, as follows:

- 0 = sub-criteria not met
- 1 = sub-criteria partially met
- 3 = sub-criteria fully met

### Scoring Criteria:

<table>
<thead>
<tr>
<th><strong>Novelty</strong></th>
<th>State clearly the aim and objectives of the project, its level of ambition, novelty, the expected addition to knowledge and describe its fit to the aims of the TCC</th>
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<tr>
<td></td>
<td>Explain the need for this particular project and note why your approach is the most appropriate, and how it might be scalable</td>
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<td></td>
<td>Describe the problem that is to be investigated, with reference to the evidence base (including references to literature)</td>
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<tr>
<td><strong>Quality</strong></td>
<td>Describe and justify the research approach/method to be taken, making clear links to which team members will be responsible for delivery</td>
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<td></td>
<td>Explain how the project engages with the idea of interdisciplinary enquiry</td>
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<td></td>
<td>State the proposed outputs and outcomes from the project, with reference to destination journals, conferences and industry groups</td>
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<tr>
<td><strong>Management</strong></td>
<td>Justify why this team is the most appropriate to deliver the project, with reference to their track record/s, and Equality, Diversity and Inclusion (ED&amp;I) – note any industrial collaborators, why they are needed, and what they bring to the team</td>
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<td></td>
<td>Explain (with a timetable⁵ and work package/task structure) how you will ensure you deliver the project on time, including sufficient engagement and networking as part of the programme</td>
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<tr>
<td></td>
<td>Provide an account of the key risks and how you will manage these (include any risks in respect of ethics, data management⁶, and staffing)</td>
</tr>
<tr>
<td><strong>Value for money</strong></td>
<td>Provide a clear justification for all resources requested⁷</td>
</tr>
<tr>
<td></td>
<td>Explain why your request is appropriate, given your project scope, ambition etc.</td>
</tr>
<tr>
<td></td>
<td>State how you will contribute to the N+, making reference to your long-term plans for follow-on funding and collaboration</td>
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⁵ A clear timetable or Gantt chart for the project and the intended progress of the research through the different stages.

⁶ Research data quality and provenance are important. Research data generated must be well-managed by the grant holder during the grant period to enable their data to be best exploited for further research.

⁷ The justification of resources should explain why the resources requested are appropriate for the research proposed, taking into account the nature and complexity of the research proposal.
### Impact

- Describe the long-term effect that you expect your project to have on the Transforming Construction agenda, and how you would expect this impact to be measured or recognised.
- Explain your overall approach to industry engagement and/or collaboration, including which people/organisations you will involve and how you will ensure this engagement.
- Set out your pathway/s to impact, including your target audience/s and beneficiaries, how you will reach them, and what change you expect to see.

### Submissions:

- To download an application pack, visit the [N+ website](https://example.com).
- The deadline for submissions is **16.00, Friday 14 November 2019**.
- Submissions should be sent to this email address: [enquiries.tcnetworkplus@ucl.ac.uk](mailto:enquiries.tcnetworkplus@ucl.ac.uk).

### Enquiries:

A FAQ page is available on the [N+ website](https://example.com). Please check it if you have any questions regarding the Funding Call.

### Contact

For all enquiries about the Call, please contact [enquiries.tcnetworkplus@ucl.ac.uk](mailto:enquiries.tcnetworkplus@ucl.ac.uk) and join our mailing list [here](https://example.com).

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8 Describe how the potential impacts of your research will be realised. This is specific to users and beneficiaries of the research who are outside of the academic research community (e.g. industry and policy makers). Applicants are advised to use [Fast Track Impact – Impact Planning Template](https://example.com).